

DIABETES

METROPOLITAN LIFE INSURANCE COMPANY

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WE are all stokers, responsible for the fuel that goes into our human engines. We need the right fuel and in right amounts. But what is right in health may be wrong in disease, and sometimes the human machine breaks down and cannot burn even the best of fuel.

Diabetes is a disease in which there is improper burning of the fuel supplied to the human engine.

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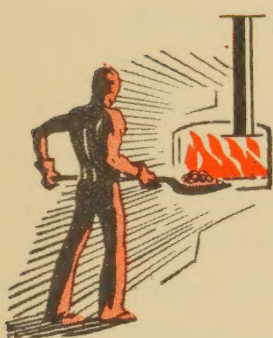
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DIABETES

THE FUEL OUR BODIES NEED



IN ORDER to live, we need to give our bodies food and water. Foods are divided into three great classes: (1) fats, such as are found in cream, butter, nuts, and the fat of meat; (2) proteins, such as lean meat, and eggs—particularly the whites, which are pure protein; (3) carbohydrates, including the starches and sugars which are contained largely in bread and cereals; vegetables, especially potatoes and corn; and fruits. In addition we need the mineral salts and vitamins contained in food.

When these foods are taken into the body, they are broken up by the digestive juices, absorbed through the intestinal wall, and carried by the blood to nourish all the tissues of the body.

Tissues are made of cells, and each cell is like a tiny engine which must be supplied with fuel and water in order to do its work. The *protein* which we eat keeps the cell engine in working order; the *carbohydrate* supplies the *wood* for the little engine, as it is easily burned and turned into energy; and the *fats* we consume might stand for the *coal* of the engine, since they burn satisfactorily only in the fire already kindled by the carbohydrates. In order that these engines may work smoothly—or, indeed, at all—they require *oil*, and one such *oil* in the human body is insulin. If this oil is lacking, the wood and coal for the cell engine are not properly burned, and the full amount of energy contained in the food is not supplied to the body. This improper burning, known as *Disordered Metabolism*, indicates that the body machinery is out of order.

DIABETES—ITS SIGNS AND CAUSES

DIABETES is a disease of this kind. If the internal secretion of the pancreas, known as insulin, is deficient in amount, only a little carbohydrate (sugars and starches) can be burned. This means that if more than a very limited amount of carbohydrate is eaten, it piles up in the body, giving rise to thirst. The result is that the patient drinks large quantities of water—even 8 or 10 quarts daily—and, because of this, passes urine frequently. This urine contains sugar which the body has not been able to use. As the body tissues are not properly nourished, there is constant hunger. Thus the three first symptoms of diabetes are thirst, excessive urination, and hunger. There is in addition loss of weight, strength, and vigor. In the case of children, bed-wetting is a common symptom. Among older persons, boils and carbuncles may be the first sign. In aged people, gangrene is a frequent complication of diabetes and may lead to the discovery of the disease.

Diabetes is more common among women than among men. It occurs more frequently among Jews than among members of other races. Fat people are much more liable to have it than thin people; old more than young people. It begins most frequently in late middle life among overweight people. Consequently, individuals inclined to be fat should exercise and restrict their diet to prevent gain in weight. This applies especially to adult relatives of diabetics, because the tendency to the disease is hereditary. Those more likely to develop diabetes will improve their chances of avoiding it if they keep their weight slightly below normal by sufficient exercise and restriction of diet.

THE DIET OF DIABETIC PATIENTS

Regulation of diet must be the basis for any treatment of diabetes. The diet should be prescribed by the physician and followed with the greatest care. Meals should be carefully

planned to include the right proportions and the proper quantities of the different classes of foods—carbohydrates, proteins, and fats—because a diabetic never should overeat.

Following are examples of the type of meals usually recommended for diabetic patients; the same kinds of food are suitable for both lunch and dinner.

Breakfast

One orange or one-half
grapefruit
A small portion of cereal
One slice of bread
One egg
Two crisp slices of bacon
Coffee and cream

Lunch and Dinner

Clear soup
A small piece of lean meat or
fish
Vegetables—selected from the
5- or 10-percent lists below
One potato
One slice of bread
A small orange or equivalent

During the day, $\frac{1}{4}$ to $\frac{1}{2}$ pint each of milk and of medium cream, and moderate portions of butter.

Common vegetables which contain approximately 5 percent carbohydrate. The ones to be preferred are:

Asparagus	Endive
Beet greens	Lettuce
Broccoli	Mushrooms
Brussels sprouts	Radishes
Cabbage	Sauerkraut
Cauliflower	Spinach
Celery	String beans (very young)
Cucumbers	Tomatoes

Those which contain approximately 10 percent are:

Beets	Squash (hubbard)
Carrots	String beans
Onions	Turnips
Peas (very young)	

HOW INSULIN HELPS THE DIABETIC

NO ONE can live without insulin. A person must make it in his own body or it must be obtained elsewhere and introduced into the system. The essential difference between a diabetic and a normal person is that the diabetic cannot manufacture enough insulin in his own body to enable him to use up the carbohydrate which he eats. He is, therefore, told to reduce his diet, or, if this does not help, treatment with insulin may be recommended. Insulin gives the diabetic what his own body should be making.

It is often asked: Must the patient taking insulin continue to take it indefinitely? The answer to this, which in any particular case must of course come from the physician, depends on the severity of the disease and the success in treating it. In the mild case of diabetes, after enough insulin has been received to rest and relieve the strain on the pancreas, the patient may improve so much that the use of insulin can be stopped. The severe diabetic is relieved of his symptoms and usually is able to reduce the dose, but seldom is able to discontinue insulin.

Protamine Zinc Insulin

A new form of insulin, known as protamine zinc insulin, is extensively used today in the treatment of diabetes. This insulin acts more slowly and over a longer period of time than regular insulin, so that a single daily injection of it is usually sufficient. Certain patients, however, need both regular insulin and protamine zinc insulin. Both insulins may be injected at the same time. Patients must be guided by their physicians as to the kind of insulin best suited to their needs.

DIABETIC COMA AND INSULIN SHOCK

DIABETIC patients who feel ill and who experience the early signs of coma (a form of unconsciousness), such as nausea, vomiting, abdominal pain, rapid breathing, drowsiness, or restlessness, or who have a fever from any cause, should send for the physician, go to bed, get a nurse, keep warm, take an enema, and drink a cupful of hot liquid every hour. The transfer of the patient to a hospital may be necessary.

It is important to distinguish between diabetic coma and insulin reaction or shock, which may also cause unconsciousness. Coma comes on gradually through a period of hours or days. Insulin reactions vary with the type of insulin used—both as to the time at which they occur after insulin is taken and their symptoms. With regular insulin, shock develops quickly—in an hour or even a few minutes. With protamine zinc insulin, usually reactions come on more slowly although occasionally the onset is rapid. Insulin reactions are due to taking too little food, or too much insulin, or unaccustomed exercise. The early symptoms of a reaction are hunger, sweating, tremor, and nervousness. Nausea and headache may also occur if the reaction is due to protamine zinc insulin. Sugar, particularly if given immediately, is an effective treatment for shock. The diabetic patient should, therefore, carry with him two lumps of sugar to be eaten if signs of insulin reaction develop. Patients using protamine zinc insulin may have to take sugar a second time. Repeated reactions call for adjustment of insulin or diet at or between meals or upon retiring, and patients suffering from them should consult their physicians without delay. A wise precaution against both coma and shock is for the patient to see his physician once a month and to follow his instructions carefully.

INFECTIONS AND GANGRENE

INFECTIONS in diabetics are serious, as they may make the diabetes worse. This is true of minor infections as well as of the more serious ones. Therefore, boils, carbuncles, and other infections, such as those of the gall bladder, appendix, tonsils, or teeth, occurring in diabetics should receive prompt medical attention. All eruptions and infections of the skin, especially those which cause itching, such as athlete's foot, may be further irritated by scratching and rubbing and thus allow dangerous infection to develop. Many infections of the skin can be prevented by scrupulous personal cleanliness.

Since gangrene may develop in diabetics from the slightest bruise or abrasion of the skin, even very minor injuries should be promptly brought to the attention of the physician. Gangrene also occurs frequently as a result of self-treatment of corns and calluses on the feet or from the use of strong antiseptics. Unless he has been carefully trained in foot hygiene, a diabetic should use the services of a good chiropodist, recommended by his physician. He should tell the chiropodist that he is a diabetic.

TO GUARD AGAINST DIABETES

- (1) Overweight should be reduced, especially if you are the relative of a diabetic, by limiting the amount of food eaten and by taking exercise under the physician's direction. You should not, however, put yourself on a reducing diet without medical advice.
- (2) If you are overweight or have diabetes in your family, frequent health examinations by your physician, including a urinalysis and a blood test, will lead to early discovery and prompt treatment of the disease in case it develops.

If you have diabetes or there is diabetes in your family, when you want to marry it is advisable to choose a mate who does not have diabetes or in whose family there is no diabetes.